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## Terra Cotta Restoration

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**A**mong Chicago's architectural heritage are many vintage masonry buildings which rely on terra cotta ornamentation for their rich character. Fanciful images such as griffins, gargoyles, gods and goddesses—draw attention to facades and help define a building's lines.

Terra cotta was a popular building material because it could be cast in an infinite number of decorative shapes. However, the same properties which made it attractive to designers has made it a challenge for building owners to maintain and preserve. By virtue of its basic make-up (porous clay baked in hollowed-out pieces) and attendant anchorage system, terra cotta is a complex building material to repair and restore.

The first step in any rehabilitation program is an evaluation. For buildings in the city subject to the recent ordinance on the maintenance of exterior envelopes, an investigation becomes even more important.

Because much decorative terra cotta, such as parapets, cornices, friezes, column capitals, window mullions and copings, is located on the upper reaches of buildings, it is exposed to harsh weathering. With its ornate, projecting elements and placement, maintenance is difficult and the likelihood of problems increases.

Problems are not easy to spot from the ground. Often the condition of terra cotta units is difficult to determine unless they are tapped, touched and even, selectively removed. At one building, small shards of terra cotta facing were falling to the street, 18 stories below. A close-up inspection from a scaffold was necessary to identify and remove dangerous pieces. In some cases, it was discovered, that the only thing holding the terra cotta in place was a bit of caulking—or less.

Dangerous conditions resulting from unstable masonry must be addressed promptly. Though it is not always economically feasible to completely renovate a façade, emergency repair programs are designed to alleviate safety hazards while respecting an owner's



budget. Emergency measures might include removal of loose material; short-term supplemental supports; or jacketing (encasing the area). Stabilization techniques must be engineered with care and monitored closely. It must be emphasized, however, that these are stop-gap measures. Long-term solutions must eventually be administered.

An assessment of the type, location and extent of any deficiencies will form the basis for subsequent decisions about repair options. Three methods are available to repair terra cotta. **Duplication** uses a model of the original piece as the basis for a new casting. **Replication** entails casting a copy made from glass fiber reinforced concrete or fiberglass as well as formed aluminum. **Approximation** uses a piece of planed limestone to provide a profile similar to the original.

A successful terra cotta repair program seeks to balance aesthetics and cost. The choice of repair methods is governed by several considerations: level of deterioration, visibility of repair, desired appearance, budget and construction schedule. Working closely with an owner, an architect or engineer can help preserve a building's architectural character.



**Close up of typical terra cotta work found on many Chicago area properties.**